LIGHT EMITTING DIODE SPECIFICATION

CUSTOMER NAME:

DESCRIPTION: EL4557PTC

REVISION： V2.2

ISSUE DATE： 2018-07-25

Features:

- Long operating life
- Low Power Consumption
- Wide Viewing Angle
- Low voltage DC operated
- RoHS Compliant

Application:

- Position sensor
- Infrared applied system
- Optoelectronic switch
- Miniature switch
- Counters and sorter

Part Number	Dice Material	Emitted Color	Lens Color
EL4557PTC	Silicon	Phototransistor	Water Clear

Electro-Optical Characteristics(Ta=25℃, @20mA)

Parameter	Symbol	Min.	Typ.	Max.	Unit	Test Condition
Collector-Emitter Breakdown Voltage	BV_{CEO}	30	-	-	V	I_C=100μA Ee=0mW/cm^2
Emitter-Collector Breakdown Voltage	BV_{ECO}	5	-	-	V	I_C=100μA Ee=0mW/cm^2
Collector-Emitter Saturation Voltage	V_{CE}(sat)	-	-	0.4	V	I_C=200μA Ee=1mW/cm^2
Collector Dark Current	ICEO	-	-	100	nA	VCE=20V Ee=0mW/cm²
Rise Time	tr	--	15	--	μS	V_{CE}=5V I_C=1mA R_L=1000Ω
Fall Time	t_f	--	15	--	μS	V_{CE}=5V I_C=1mA R_L=1000Ω
On State Collector Current	Ic(ON)	0.86	--	--	mA	Ee=1mW/cm^2 V_{CE}=5V
Rang Of Spectral Bandwidth	λ0.5	400	-	1100	nm	-

Rank

Parameter	Symbol	Condition	Min.	Max.	Unit
BIN1	Ic(ON)	Ee=1mW/cm^2 V_{CE}=5V	0.86	1.31	mA
BIN2			1.20	1.69	
BIN3			1.50	2.12	
BIN4			2.00	2.81	
BIN5			2.70	4.50	

Optical & Electrical Characteristics

Fig.1Collector Power Dissipation vs. Ambient Temperature

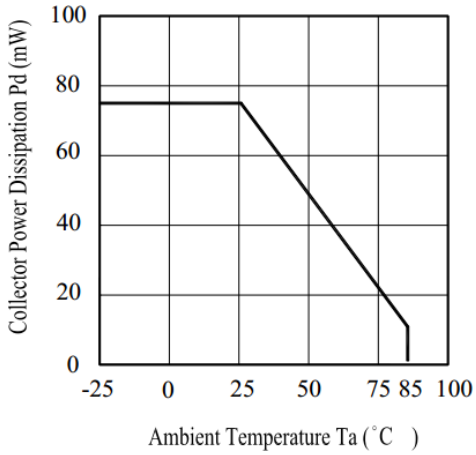


Fig.2 Spectral Sensitivity

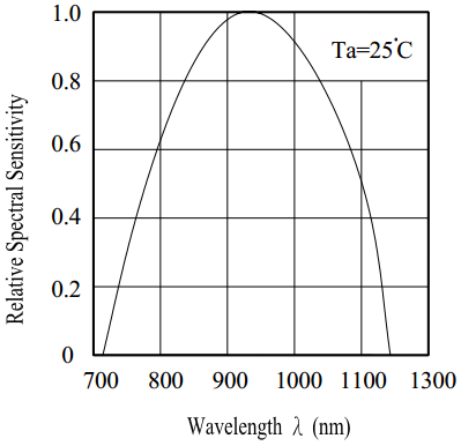


Fig.3 Relative Collector Current vs. Ambient Temperature

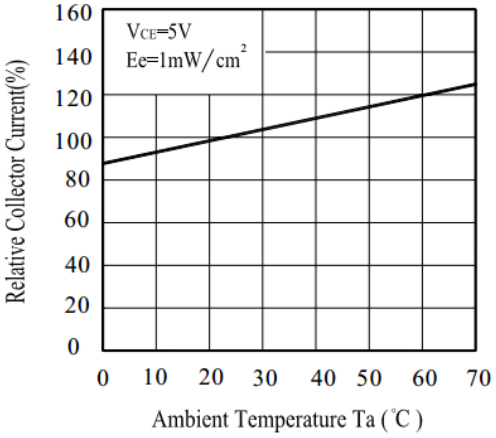


Fig.4 Collector Current vs. Irradiance

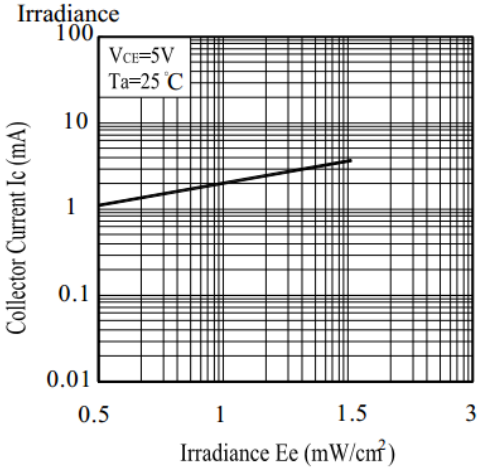


Fig.5 Collector Dark Current vs. Ambient Temperature

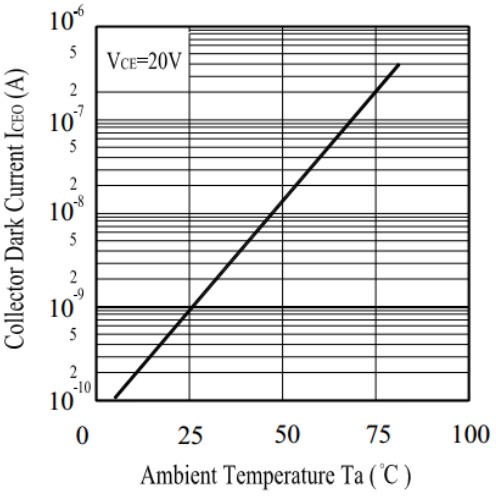
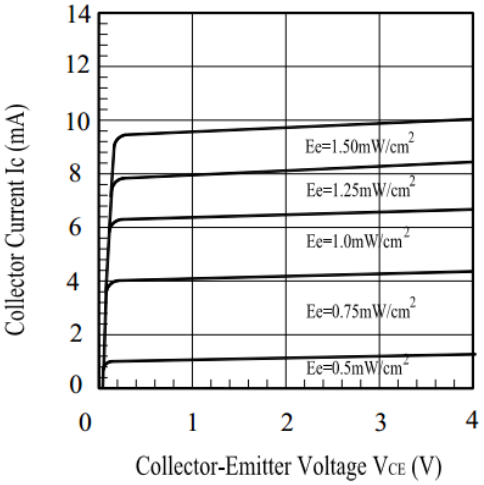


Fig.6 Collector Current vs. Collector-Emitter Voltage



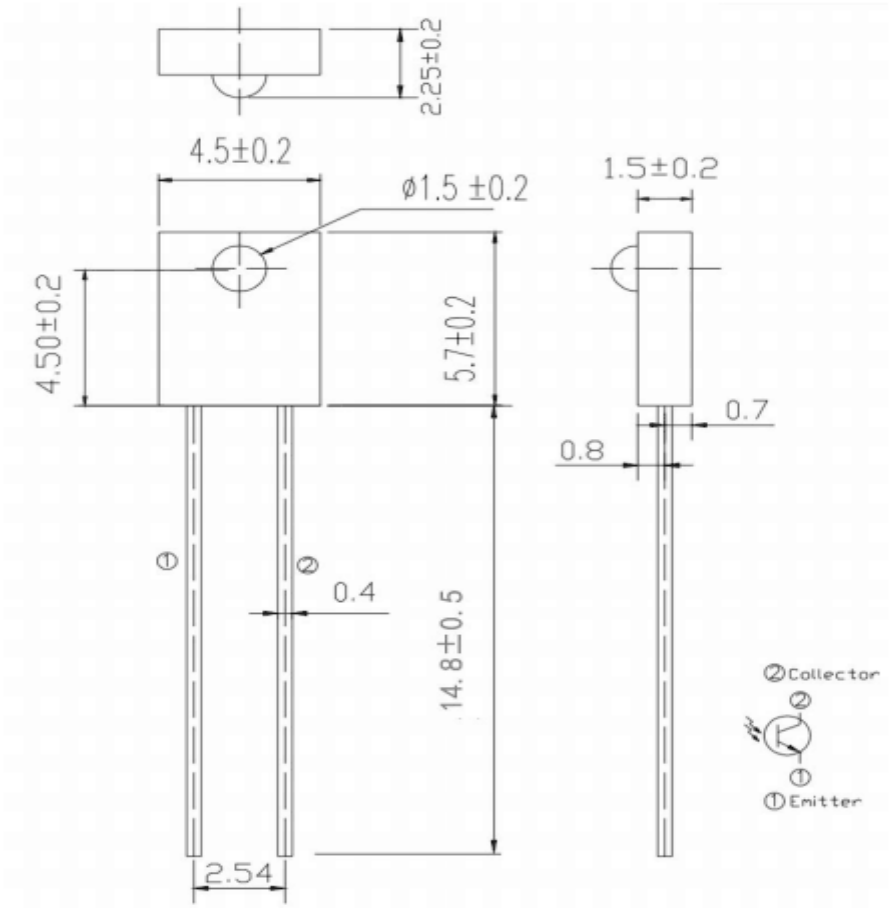
Reliability Test Items And Conditions

Test Items	Reference	Test Conditions	Time	Quantity	Criterion
Thermal Shock	MIL-STD-202G	-40℃ (30min) -100℃ (30min)	100 Cycles	22	0/22
Temperature And Humidity Cyclic	JEITA ED-4701 200 203	-10℃~65℃; 0%~90%RH	10cycles	22	0/22
High Temperature Storage	JEITA ED -4071 200 201	Ta=100℃	1000H	22	0/22
Low Temperature Storage	JEITA ED -4071 200 202	Ta=-40℃	1000H	22	0/22
High Temperature High Humidity Storage	JEITA ED -4071 100 103	Ta=60℃; RH=90%	1000H	22	0/22
High Temperature Life Test	JESD22-A108D	Ta=80℃	1000H	22	0/22
Life Test	JESD22-A108D	Ta=25℃	1000H	22	0/22
Resistance to Sodering Heat	GB/T 4937, Ⅱ, 2.2&2.3	Tsol*=(240±5)℃10secs	2 times	22	0/22

Criteria For Judging Damage

Test Items	Symbol	Test Conditions	Criteria For Judging Damage
Forward Voltage	V_F	$I_F=I_{FT}$	Initial Data±10%
Recerse Current	I_R	V_R=5V	I_R≤10uA
Luminous Intensity	IV	$I_F=I_{FT}$	Average I_V degradation≤30%；Single LED I_V degradation≤50%
Resistance to Soldering Heat	-	-	Meterial without internal cracks,no meterial between stripped,no deaded light

Product size (Unit:mm)

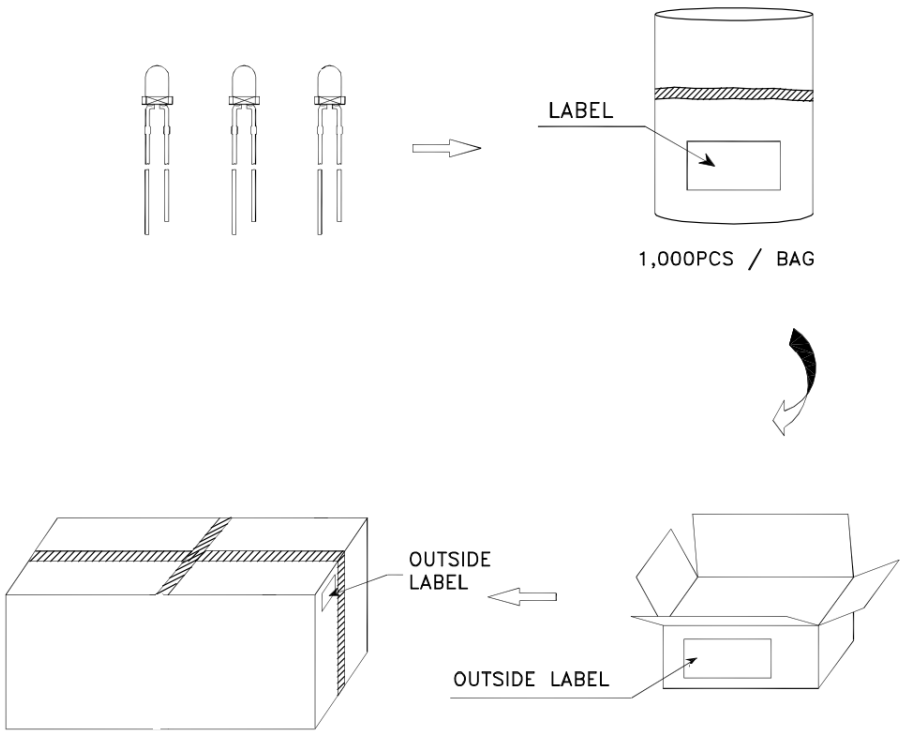


Notes:

1. All dimensions are in millimeters (inches).
2. Tolerance is ±0.25(0.01") unless otherwise noted.
3. Lead spacing is measured where the leads emerge from the package.

LabelStyle

Packaging



Precautions

1. Lead Forming

1.1 During lead formation, the leads should be bent at a point at least 3mm from the base of the epoxy bulb.

1.2 Lead forming should be done before soldering.

1.3 Avoid stressing the LED package during leads forming. The stress to the base may damage the LED's characteristics or it may break the LEDs.

1.4 Cut the LED lead frames at room temperature. Cutting the lead frames at high temperatures may cause failure of the LEDs.

1.5 When mounting the LEDs onto a PCB, the PCB holes must be aligned exactly with the lead position of the LED. If the LEDs are mounted with stress at the leads, it causes deterioration of the epoxy resin and this will degrade the LEDs.

2. Storage

2.1 The LEDs should be stored at 30°C or less and 70%RH or less after being shipped from Everlight and the storage life limits are 3 months. If the LEDs are stored for 3 months or more, they can be stored for a year in a sealed container with a nitrogen atmosphere and moisture absorbent material.

2.2 Please avoid rapid transitions in ambient temperature, especially, in high humidity environments where condensation can occur.

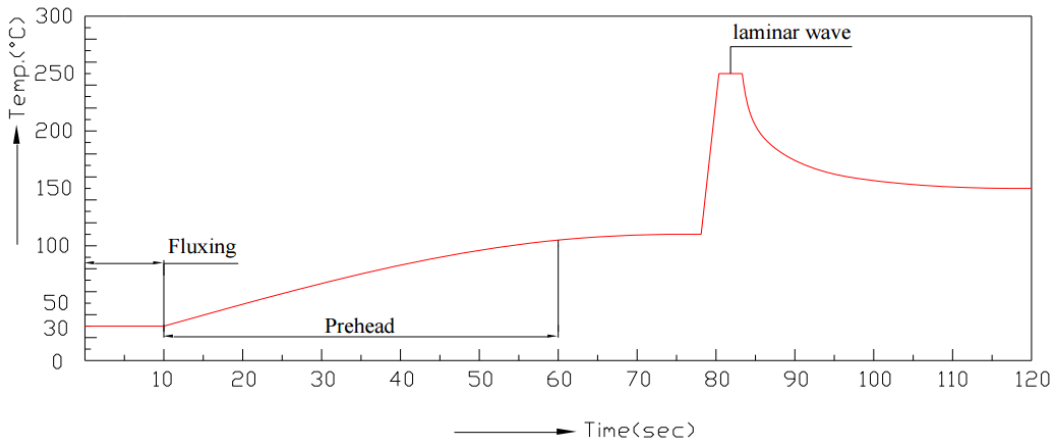
3. Soldering

3.1 Careful attention should be paid during soldering. When soldering, leave more then 3mm from solder joint to epoxy bulb, and soldering beyond the base of the tie bar is recommended.

3.2 Recommended soldering conditions:

Hand Soldering		DIP Soldering	
Temp. at tip of iron	300℃ Max. (30W Max.)	Preheat temp.	100℃ Max. (60 sec Max.)
Soldering time	3 sec Max.	Bath temp. & time	260 Max., 5 sec Max
Distance	3mm Min.(From solder joint to epoxy bulb)	Distance	3mm Min. (From solder joint to epoxy bulb)

3.3 Recommended soldering profile



3.4 Avoiding applying any stress to the lead frame while the LEDs are at high temperature particularly when soldering.

3.5 Dip and hand soldering should not be done more than one time

3.6 After soldering the LEDs, the epoxy bulb should be protected from mechanical shock or vibration until the LEDs return to room temperature.

3.7 A rapid-rate process is not recommended for cooling the LEDs down from the peak temperature.

3.8 Although the recommended soldering conditions are specified in the above table, dip or hand soldering at the lowest possible temperature is desirable for the LEDs.

3.9 Wave soldering parameter must be set and maintain according to recommended temperature and dwell time in the solder wave.

4. Cleaning

4.1 When necessary, cleaning should occur only with isopropyl alcohol at room temperature for a duration of no more than one minute. Dry at room temperature before use.

4.2 Do not clean the LEDs by the ultrasonic. When it is absolutely necessary, the influence of ultrasonic cleaning on the LEDs depends on factors such as ultrasonic power and the assembled condition. Ultrasonic cleaning shall be pre-qualified to ensure this will not cause damage to the LED